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The buffering effect of family functioning on the psychological consequences of headache

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ABSTRACT

The current study aimed to examine whether high family functioning mitigates the association between headache intensity and distress. The sample consisted of 124 patients with chronic or recurrent headache. Patients completed validated questionnaires about headache intensity, family functioning, and distress. Hierarchical regression analyses were performed to examine the interaction between headache intensity and family functioning on distress. Headache intensity was positively associated with distress (r = .28, p = .002). As hypothesized, family functioning moderated this association (B = –.01, p = .023). More specifically, the positive association between headache intensity and distress was significant only among patients with lower family functioning (B = .01, p < .001) and not among patients with higher levels of family functioning (B = .006, p = .075). Functional families appear to buffer the distress level in patients; they showed relatively low levels of distress regardless of the severity of their headache. In contrast, patients with dysfunctional families who experienced more pain reported more distress, presumably because they did not receive adequate help and support from these families. This study underlines the importance of a broader perspective on family dynamics in coping with pain.

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Headache intensity; family functioning; moderating role; distress

Introduction

Headache is one of the most common neurological disorders worldwide, and causes considerable distress in patients (Falavigna et al., 2013). Some studies suggested that patients with more intense headaches experience more distress (Falavigna et al., 2013), while others have failed to show this relationship (Breslau, Lipton, Stewart, Schultz, & Welch, 2003; Swartz, Pratt, Armenian, Lee, & Eaton, 2000). Based on the stress-buffering hypothesis (Cohen, Cohen, & Gottlieb, 2000), we propose that the relationship between headache intensity and distress depends on the functioning of the patients' families. Specifically, we hypothesize

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that this relationship is weak if patients are living in functional families. Support for this hypothesis would suggest that families play an important role in dealing with pain and that healthcare providers should consider involving families in treatment.

Functional families are those with clear role definitions, cohesion, clear communication styles and effective problem solving (Epstein, Bishop, & Levin, 1978). Functional families are able to provide support to their members, whereas dysfunctional families are less well equipped to do so (Thomas & Olson, 1993). Furthermore, functional families make adjustments to the family system to meet the demands of ill family members (Segrin & Flora, 2011), such as increasing problem-solving behaviours and showing more affective responses (Segrin & Flora, 2011; Wamboldt & Wamboldt, 2000). In contrast, when facing stressors, dysfunctional families are either rigid in their structure and cannot make the necessary changes or they make dramatic changes. These dramatic changes can become new sources of stress (Olson, Sprenkle, & Russell, 1979; Segrin & Flora, 2011). Accordingly, where recurring headaches are experienced, only functional families can provide support based on the patients' needs which mitigate the negative psychological outcomes of the headaches. This is in line with other health literature which emphasizes the moderating effect of support on the relationship between illness severity and its psychological outcomes (Carpenter, Fowler, Maxwell, & Andersen, 2010; Uchino, 2004). Therefore, we hypothesize that the positive relationship between headache intensity and distress is weaker in patients with functional families than in patients with dysfunctional families.

Methods

Procedure

Patients with tension-type headaches or migraines (both are among the most common headache disorders) who were referred to Emam Hossein Hospital and a neurology clinic in Tehran, Iran between April and October 2012 were invited to participate in the study. Patients who gave informed consent completed a battery of questionnaires. The inclusion criteria for patients were having a chronic daily headache (i.e. occurring 15 days or more a month) or a recurrent headache (i.e. fewer than 15 days a month) diagnosed by a neurologist, being aged between 18 and 60, and having sufficient literacy to complete questionnaires. The exclusion criteria were having other types of pain, having serious medical or mental illnesses, and current drug or alcohol abuse. The respective ethics committees of the hospital and clinic approved conducting the study.

Measures

Headache intensity

A visual analogue scale (VAS) was applied to measure current headaches intensity. The VAS is a linear scale, ranging between 0 = no pain and 100 = most intense pain. As in previous studies (e.g. Trost et al., 2014) the VAS scale was used as a continuous variable.

Family functioning

We used the 60-item Family Assessment Device (FAD; Epstein, Baldwin, & Bishop, 1983). Each item (e.g. 'we feel accepted for who we are') was answered on a 4-point Likert scale (1 = strongly disagree to 4 = strongly agree). The psychometric properties of the FAD were

satisfactory (e.g. Kabacoff, Miller, Bishop, Epstein, & Keitner, 1990). In this study, higher average scores indicate higher family functioning (Cronbach's α = .92). As in previous studies, FAD scores were treated as continuous (e.g. Liakopoulou-Kairis et al., 2002).

Distress

Distress was measured using a short version of the Depression, Anxiety and Stress Scale (DASS; Lovibond & Lovibond, 1995). This scale has 21 items assessing depression (e.g. 'I felt that life was meaningless'), anxiety (e.g. 'I felt I was close to panic'), and stress (e.g. 'I found it hard to wind down'). Participants reported how much each statement applied to them on a 4-point Likert scale (0 = never, 3 = always). As in previous studies, (e.g. Meredith, Strong, & Feeney, 2006), we averaged the items into a single distress indicator (Cronbach's α = .94) with higher scores indicating more distress, and considered the DASS-21 as a continuous variable.

Statistical analyses

Gender, Marital status, Type of headache, and Chronicity of headache were dichotomized. Pearson and Point Biserial correlations were calculated for continuous and dichotomized variables, respectively. A three-step hierarchical regression analysis was conducted to investigate the effect of family functioning (moderator) on the association between headache intensity (independent variable) and distress (dependent variable). In the first step, the demographic variables which showed significant correlations with distress, headache intensity or family functioning were controlled. In the second step, the independent and the moderator were entered. Finally, the interaction between headache intensity and family functioning was added. To avoid multicollinearity, the scores of headache intensity and family functioning were mean centred (i.e. score minus mean) and the interaction variable was computed as the product of these mean-centred scores (Aiken & West, 1991). To interpret the interaction, we plotted the regression slopes for low (−1SD) and high (+1SD) family functioning and conducted simple slope analyses to test the statistical significance of the separate slopes.

Results

Participants' characteristics

The participants' (n = 124) mean age was 32.5 (SD = 9.9). The majority were female (n = 89, 71.8%) and married (n = 83, 66.9%). The rest were single (n = 39, 31.5%) or divorced (n = 2, 1.6%). Sixty-nine participants (55.6%) suffered from chronic daily headache and 55 (44.4%) suffered from non-chronic headache. Most of the participants had a tension-type headache (n = 90, 72.6%), and 34 individuals (27.4%) had migraines. Both headache intensity (mean = 73.31, SD = 16.88; p = .002) and family functioning (mean = 2.45, SD = .34; p = <.001) correlated with distress (mean = .79, SD = .64). Table 1 shows correlations between the variables in the study.

Testing the moderating effect of family functioning

The results revealed significant main effects of headache intensity (B = .01, p < .001) and family functioning (B = −.64, p < .001) on distress, controlling for marital status (B = −.14,

Table 1. The correlations between all the variables.

	1	2	3	4	5	6	7
1. Age	–						
2. Gender	15						
3. Marital status	54**	24**					
4. Type of headache	−.10	−.22*	−.05				
5. Type of chronicity	02	12	06	−.14			
6. Headache intensity	−.01	04	01	09	12		
7. Family functioning	−.08	−.05	02	01	21*	−.01	
8. Distress	−.01	1	−.22*	−.01	12	27**	−.31**

Notes. Pearson correlations were calculated for continuous variables. Point biserial correlations were used to investigate the associations between dichotomized variables, i.e. Gender (female = 0, male = 1), Marital status (single = 0, married = 1), Type of headache (migraine = 0, tension-type = 1), and type of chronicity (non-chronic = 0; chronic = 1).
*$p < .05$;
**$p < .01$.

Table 2. The results of the moderating effects of the family functioning on the association between headache intensity and distress.

		B	SE	*β*	Adjusted R^2	ΔR^2	ΔF	*P*
Step 1					.05	.06	3.92	.02
	Marital status	−.14	.05	−.22				.01
	Chronicity of headache	.10	.05	.16				.05
Step 2					.21	.18	13.62	<.001
	Headache intensity	.01	.003	.30				<.001
	Family functioning	−.64	.14	−.36				<.001
Step 3					.25	.03	5.28	.02
	Headache intensity × Family functioning	−.02	.01	−.19				.02

Notes. The Bs, SEs, and *β*'s are from the final model; final regression model: $F(5118) = 8.69$, $p = <.001$.

$p = .006$; higher distress in single patients) and headache chronicity ($B = .10$, $p = .049$; higher distress in patients with chronic headache). Importantly, family functioning moderated the relationship between intensity and distress ($B = -.01$, $p = .023$). Simple slope analyses revealed that the relationship between headache intensity and distress was only significant where patients reported low family functioning ($B = .01$, $p < .001$). The relationship was not significant if patients reported high levels of family functioning ($B = .006$, $p = .075$). Table 2 shows the results of the regression analysis. Figure 1 depicts the regression lines at two levels of family functioning.

Discussion

The findings indicate that more intense headaches are not related to more distress among individuals with more functional families, while the reverse is true of patients with less functional families. Although the moderating effect of family functioning on the link between headache intensity and distress has not been explored previously, a few studies in the context of chronic physical illness indicated that patients with more functional families showed lower levels of psychological problems compared to their counterparts with less functional families (Lewandowski, Palermo, Stinson, Handley, & Chambers, 2010; Logan & Scharff, 2005). These findings imply that functional families provide their members, specifically patients, with an opportunity to communicate their illness-related problems in a healthy, direct and clear way (Popp, Robinson, Britner, & Blank, 2014), and could therefore provide

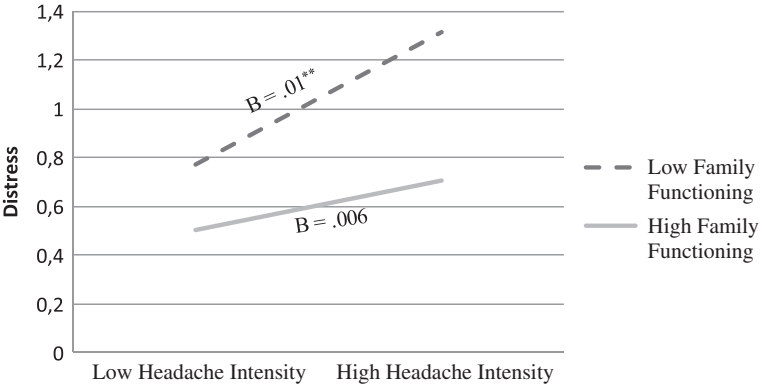

Figure 1. The interactive effect of headache intensity and family functioning on distress.

more effective support than that received by patients in dysfunctional families. Similarly, Martire and Schulz (2007) suggested that increasing the quality of interactions (i.e. family functioning) between patients and their family members results in higher support for patients. Furthermore, patients who are living in functional families may recognize and validate their family members' support, which could reduce the caregiving burden (Martire & Schulz, 2007) and encourage family members to continue their support.

To interpret our findings, we have to acknowledge this study's cross-sectional nature and relatively small sample size. Furthermore, the FAD does not assess the illness-related features of family functioning. As some research indicated (e.g. Anderson, Brackett, Ho, & Laffel, 1999; Conger & Donnellan, 2007), families' illness-related interactions significantly influence patient outcomes. Despite these limitations, our findings raise a number of new questions. For example, it would be interesting to examine whether the interactions among all family members (i.e. family functioning) are more important than the interactions between patients and specific family members (e.g. the primary caregiver). Investigating the influence of cultural background is also important. That is to say that in collectivistic cultures where families and the relationships among all family members are highly important, such as Asian cultures (Chao & Tseng, 2002), it is likely that family functioning has a stronger effect on a patient's psychological outcomes than the interactions between patients and a specific family member.

As far as we know, this study was the first to evaluate the moderating role of interpersonal interactions among family members on the relationship between headache intensity and distress among patients with headaches. Our findings underline the importance of taking a broader perspective on family dynamics in coping with pain.

Disclosure statement

No potential conflict of interest was reported by the authors.

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